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GOODNESS IN GAMING: GAMERS AND THEIR ALTRUISM

by

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in the College of Sciences
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ABSTRACT

The psychological inquiry into the effects of videogames and the internet on behavior is still a relatively new field. The question of whether playing violent videogames directly contribute to violent behavior, particularly in reference to its influence in mass shootings, is an important one that needs answers. A plethora of research purportedly shows the negative effects of (violent) videogames, but research showing positive effects, particularly on prosocial behaviors within the virtual world and reality, are less common. If specific videogame preferences are associated with altruistic behaviors, such a finding could elucidate how videogames might contribute to prosocial behavior. In this study, I examined if variables related to playing videogames are associated with altruism. Specifically, study variables were: (1) type of videogame played by participants (violent vs. non-violent); (2) the role players assume when playing (hero vs. villain); and (3) typical playing status (in teams vs. alone). Undergraduate students ($n = 173$; 120 females, 49 males, 4 “other”) completed a set of questionnaires assessing the following: their videogaming preferences and behaviors, altruism, pleasure at viewing violent media, antisocial behaviors, and aggressiveness. I had hypothesized that game players preferring to play violent games, on average, would obtain lower scores on altruism than players preferring to play non-violent games. The data did not support that hypothesis. I also hypothesized that game players who preferred playing heroes in games (instead of villains) and who preferred playing in teams (instead of playing alone) would obtain higher scores in altruism. Contrary to predictions, the data did not support those hypotheses. I also conducted exploratory analyses to determine if gaming preferences (e.g., violent or non-violent games, playing the role

of heroes or villains, and playing in teams or alone) would be associated with extra-study variables (pleasure at viewing violent media, antisocial behaviors, and aggressiveness). None of the gaming preferences were associated significantly with any of the extra-study variables. All considered, these findings suggest that there is no disconcerting behavioral profile of video-gamers who enjoy playing violent video games, assuming any specific type of role, or playing in teams or alone. Additional implications of these findings are discussed.

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INTRODUCTION

The psychological inquiry into the effects of videogames and the internet on behavior is still a relatively new field. Even though the first studies of videogames and violence began to emerge in the 1990s, researchers are still working on understanding if decisions made in videogames influence behaviors in the real world. The question of whether playing violent videogames directly contribute to violent behavior, particularly in reference to its influence in mass shootings, is an important one that needs answers. There are several studies showing the negative effects of videogames, such as studies by Sarah Coyne and Wayne Warburton. Specifically, the five-year longitudinal study done in 2018, (Coyne & Warburton, 2018) which found that introductory exposure to video game violence were associated with lower levels of prosocial behavior and higher levels of externalizing behavior. Studies by Craig Anderson also support video games' negative effects, such as his meta-analyses of screen violence, (Anderson et. al, 2017). This study found that the short-term effects of playing video games caused increased aggressive behavior, hostile appraisals, and decrease in empathy. Anderson believes that this shows video games may increase aggression. Research showing the positive effects, particularly on prosocial behaviors within the virtual world and reality, are less common. If prosocial videogames are correlated with altruistic behaviors, such a finding could help further researchers' understanding of how altruism manifests itself, giving a deeper understanding of how videogames might contribute to prosocial behavior.

The research on prosocial film, literature, and even music has shown that these forms of media affect the behavior of consumers (de Leeuw & van der Laan, 2018; Johnson, 2012; Ruth, 2017), but there are too few studies demonstrating the effects of prosocial videogames. Preliminary studies suggest that prosocial videogames might lead to altruistic actions. For example, Rosenberg, Baughman, and Bailenson (2013) had two groups of participants play a virtual reality game in which they either saved a child (thus, playing the role of a superhero) or were a passenger in a helicopter. Two other groups of participants were only able to explore the city either as a superhero or a passenger in a helicopter. Prosocial behavior was operationally defined as whether or not participants helped the researcher pick up pens that the researcher feigned to have dropped. It was found that those who played the superhero in both conditions helped pick up pens significantly more compared to those who played as a passenger in the helicopter. In a similar study, Happ, Melzer, and Steffgen (2015) had participants read a bogus text about either the effects of empathy and videogames on memory or a text on memory and videogames. Then participants played the role of either a surgeon or a murderous mental patient in a videogame to determine if they simply pretended or played an instructional role in influencing prosocial or antisocial behavior. Participants were instructed to either take a candy or pen after playing the videogames, with specific instructions to only take one object (If participants took more than one object, that was considered antisocial behavior). It was found that the text condition had no effect on participants' behavior, but participants playing a murderer were significantly more likely to take a candy and a pencil compared to

participants playing the surgeon. These findings raise questions about the extent to which playing a role in the context of a videogame might affect players' extra-video-game behavior.

Adachi, Hodson, Willoughby, Ha, and Blank (2016) examined if specific types of videogames could influence prosocial behavior with two experiments. The first experiment had researchers tell Canadian participants that the experiment was a study on the relation between personality and videogame play. Participants were told they would be playing an online violent cooperative game with a university student in the United States, when in reality and unbeknown to them, they would be playing with a participant in an adjacent room. Participants were randomly assigned to either play with the student or play the game solo. Results indicated that participants who played the cooperative game had more favorable attitudes towards the outgroup (the U.S. university student) compared to participants who played by themselves. There was no difference in empathy between the two groups of participants. In the second experiment, the conditions were identical except participants were placed either into groups in which they played a violent videogame or a nonviolent videogame. Similar to the findings from study 1, results showed that regardless of game status, participants in the cooperation group showed more favorable attitudes towards the outgroup compared to those who played by themselves. In a similar study by Greitemeyer and Cox (2013), participants either played a video game cooperatively in pairs or alone. All participants were separated into separate rooms. After playing the video game, participants were told to play a game in which they would be partnered with other participants in another room. The game had participants have five poker chips, four representing fifty pence, and one representing one pound (the study was conducted

in England). Participants had to decide how many they would give to their partner in order to measure cooperative behavior. Participants were told their partner would have to make the same decision and were asked how much they expected their partner to give them in order to measure trust. Participants also had to indicate how much of a bond they feel with their partner in order to measure cohesion. It was found that participants who played cooperatively gave away more chips to their respective partners compared to those who played alone. Also, participants who played cooperatively reported feeling more trust and cohesion with their game partner than those who played alone. Results of both studies suggest that playing a video game cooperatively influences prosocial behavior and emotions.

Specifically examining how emotions and videogames influence prosocial behavior, Whitaker and Bushman (2011) had participants play a relaxing game, a neutral game, or a violent game for twenty minutes. Then they asked participants to help them sharpen pencils after the study. Results indicated that those who played relaxing games were more likely to help sharpen pencils compared to participants who played the neutral or violent videogame. Whitaker and Bushman speculated that perhaps participants in the relaxing condition may have helped more due to being in a good mood. In a related study, Harrington and O'Connell (2016) had students from 10 public schools respond to a questionnaire which had measures involving video game habits, prosocial behavior, and empathy. Teachers also were asked to rate the prosocial behavior of the participants. Results showed that playing prosocial games were positively associated with teachers' student ratings of cooperation and empathy. Curiously, playing violent video games correlated positively with prosocial behavior. Harrington and

O'Connell speculated that because participants engaged in prosocial and violent video game use, then participants were likely subject to influence by both prosocial and violent videogame content. Prosocial video game use and empathy also were positively correlated. The results suggest that prosocial video games are correlated prosocial behaviors, and that, curiously, violent video games may also be associated with prosocial behaviors.

All considered, these studies' results suggest that the role of a game character being played may influence behavior and that prosocial games may influence helping behavior. These results also suggest that games perhaps may be used to influence altruistic behavior. The proposed study is intended to add to the literature on this topic. Specifically, I will examine if various variables related to violent versus non-violent video games correlate with self-perceived altruistic tendencies.

The Current Study

Much of the literature on videogaming has focused on the relation between violent videogaming and the commission of aggression. More research is needed to determine if positive benefits are derived from playing violent videogames, particularly if players assume characters that are heroes. This study will examine if variables related to playing videogames are associated with prosocial behavior. Specifically, study variables will be: (1) type of videogame typically played by participants (violent vs. non-violent); (2) the role players typically assume when playing (hero vs. villain); and (3) typical playing category (solo vs. on a team). For

this study, prosocial behavior will be operationalized as scores on a self-reported altruism questionnaire designed to assess altruistic behaviors.

This study relied on theories of approaching how video games create specific behaviors that have been used to explain previous studies. Such as the socio-cultural theory of violence (Wolfgang & Ferracuti, 1967) which proposes that violence is transmitted via cultural norms that are expressed on the individual level. Cultural norms create conditions for an individual to have attitudes towards certain aspect of violent behavior that are viewed as appropriately permissible. Personality models have also been used to explain violent behavior, such as the Catalyst Model (Ferguson et. Al, 2008). This model proposes that through aspects of personality theory, social learning theory, and evolutionary theory, personality traits effect environmental and genetic factors that can lead to violent behavior. Following along that model is the General Aggression Model (Anderson & Bushman, 2002), that describes how aggression is primed through learning, activation, and application of knowledge of aggressive behavior that becomes stowed in memory. Situational, affective, cognitive, and arousal variables create conditions for aggressive behavior to occur. All of these theoretical frameworks have helped inform the methodical framework of this study.

This study's researchers hypothesize that participants who typically play violent videogames will score lower on altruism compared to those who typically play non-violent games. This hypothesis is made based on numerous studies showing a link between violent videogaming and aggression (see Ferguson, et al., 2008 for a review of such studies; Sherry, 2001). I also hypothesize that among those who play violent videogames, participants who

report typically playing the role of heroes will score higher on altruism compared to those who typically play the role of villains. This hypothesis is made based on the notion that logically, players drawn to typically playing the role of a hero generally ought to be more prosocial in nature, thus scoring higher on altruism. Finally, I hypothesize that participants who typically play in teams will score higher on altruism compared to those who typically play solo (i.e., alone). This hypothesis is made based on previous research showing that team playing in multiple contexts aside from videogaming elicits higher levels of cooperation among players compared to individual efforts (Jin & Li, 2017; Standage, Duda, & Pensgaard, 2005). I anticipate that findings from those studies ought to transfer to the context of videogaming. This study has the potential to clarify some distinctions about the link between violent videogaming and prosocial behavior.

In addition to assessing the pro-social behavior altruism, I included three additional measures for exploratory purposes that might elucidate any relation between gaming preferences and pro-social behaviors (specifically, the opposite of pro-social behaviors). They were anti-social behaviors, aggressiveness, and pleasure at viewing violent media. Finally, because attitudes and behaviors considered to be socially unacceptable, assessing such attitudes in the form of self-reports may be compromised by participants responding to such questions in a socially desirable manner (Cozby, 2003; Paulhus, 1991). Therefore, a measure was included in the study to control statistically for the response set of social desirability.

METHOD

Participants

Participants included 173 students enrolled in psychology courses (120 females, 49 males, 1 transgender, and 3 “other”). Regarding ethnicity, 75 participants self-identified as non-Hispanic White, 56 as Hispanic/Latino/a, 23 as African American, 11 as Asian American, and 8 as “other.”

Materials

Demographics

Participants responded to a scale assessing their age, gender, ethnicity, and class standing.

Helping Orientation Scale

Participants completed the *Helping Orientation Scale* (HOI) (Maki, Vitriol, Dwyer, Kim & Snyder, 2017). The inventory consists of 32-items to which participants agree with the statements about their disposition towards helping behaviors. The HOI uses a 7-point Likert scale, with response options ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Questions are divided between statements that endorse helping behavior (e.g., “Helping other people eventually allows for them to take care of themselves”) and statements that condone helping behavior (e.g., “Helping other people only makes them more needy in the future”). An average from both types of questions will be taken. High scores reflect a higher disposition to engage in helping behaviors. Based on the present sample of participants, the HOI showed acceptable reliability (Cronbach alpha = .84).

Pleasure at Viewing Violent Media.

To assess pleasure at viewing violent media, all participants completed the *Pleasure at Viewing Violent Media* scale (PVVM; Negy, Ferguson, Galvanovskis, & Smither, 2013). This 10-item questionnaire assesses respondents' pleasure and interest in viewing cinema movies that contain violent images. The PVVM uses as a 5-point Likert scale response format, with response options ranging from "strongly disagree" to "strongly agree." Higher scores reflect more pleasure and interest in viewing violent media. A sample item is "I enjoy watching movies with lots of action and violence." The items are divided with respect to being presented in an affirmative or a negative direction to control for response set biases. At the bottom of this scale, a multiple-choice question is included that assesses the number of violent movies participants view per week. Response options are "none," "one per week," "two per week," "three per week," "four per week," "five or more per week." Based on the present sample of participants, the PVVM showed acceptable reliability (Cronbach alpha = .67).

Aggressiveness

To measure aggressiveness, participants completed the *Aggression Questionnaire-Short Form* (AQ-sf) (Buss & Warren, 2000). The shortened version of AQ consists of the first 15 items of the original 34-item version and was designed to measure the degree to which respondents endorse statements about their levels of aggressiveness. Items are responded to using a 5-point Likert-type scale, with response options ranging from 1 ("Not At All Like Me") to 5 ("Completely Like Me"). A total score is obtained by averaging the responses. Thus, scores could range from 1

to 5, with higher scores indicating more aggressiveness. Based on the present sample of participants, the AQ-sf showed acceptable reliability (Cronbach alpha = .85).

Antisocial Personality

Participants completed the *Antisocial* subscale of the *Personality Assessment Inventory* (PAI-A; Morey, 2007). This scale consists of 12 items and was designed to measure the degree to which respondents endorse statements about behaving antisocially. Items are responded to using a 4-point Likert-type scale, with response options ranging from 1 (False) to 4 (Very True). A total score is obtained by averaging the responses. Thus, scores can range from 1 to 4, with higher scores indicating more antisocial tendencies. Based on the present sample of participants, the PAI-A showed acceptable reliability (Cronbach alpha = .83).

Social Desirability

Marlowe-Crowne Social Desirability Scale–Short-Form (M-C SDS-SF; Reynolds, 1982).

Participants' need to be perceived in a positive light were measured with the 32-item M-C SDS-SF. The items contain statements to which participants indicate their level of agreement using a 5-point Likert-type scale, ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). The M-C SDS-SF is an abbreviated version of the M-C SDS (Reynolds, 1982). A sample item is "No matter who I'm talking to, I'm always a good listener." Higher scores reflect a greater tendency to respond to test items in a socially desirable manner. Based on the present sample of participants, the M-C SDS-SF showed unacceptable reliability against traditional psychometric standards. (Cronbach alpha = .53).

PROCEDURE

This study was reviewed and approved by the institutional review board at the University of Central Florida before the commencement of data collection. Participants were recruited via several psychology courses with permission of the course instructor (Note: Due to UCF Psychology Department policies, General Psychology courses were not be included).

Participants were told about the nature of the study (it relates to altruism and violent videogames) and were invited to complete the survey outside of class. They were instructed verbally and on the first page to not write their names in the survey to maintain anonymity.

They returned the survey the following week to the course instructor who had them place their surveys in a large envelope in any order of insertion and print their names on a separate sheet of paper in order to receive extra credit points toward their respective course grade. Students who did not want to participate in this study had the option to obtain the extra credit via an alternative assignment.

RESULTS

Table 1 shows the means and standard deviations for study variables. I had hypothesized that participants who reported playing violent videogames would obtain lower scores on altruism than those reporting to play nonviolent games. To test this hypothesis, I conducted a one-way analysis of covariance (ANCOVA), with the independent variable (IV) = type of game preference (violent vs. nonviolent) and the dependent variable (DV) = scores on altruism. Social desirability scores were treated as a covariate. There was no significant effect associated with type of game preference (M altruism scores for violent game players and non-violent game players = 5.09 and 5.12 [SDs = .69 and .65], respectively, $F [1, 173] = .12, p < .05$).

I also had hypothesized that participants who reported playing the role of heroes would obtain higher scores on altruism than those who reported playing as villains. An ANCOVA was conducted to test this hypothesis, with IV = gaming role preference (hero vs. villain) and the DV = altruism scores. Social desirability was entered as a covariate. There was no significant effect associated with gaming role preference (M altruism scores for those who played heroes and villains = 5.07 and 5.15 [SDs = .66 and .69], respectively, $F [1, 173] = .09, p < .05$).

Finally, I had hypothesized that participants who reported a preference for playing video games in teams would obtain higher altruism scores than those reporting a preference for playing alone. For this ANCOVA, IV = game status preference (in teams vs. alone); the DV was altruism scores. Social desirability was the covariate. There was no significant effect associated with game status preference (M altruism scores for those who played in teams and alone = 5.02 and 5.11 [SDs = .63 and .69], respectively, $F [1, 172] = .52, p < .05$).

Exploratory Analyses

To explore further relations between gaming preferences and extra-study variables, I conducted a multivariate analysis of covariance (MANCOVA), with IVs = gaming type preference (violent vs. non-violent), gaming role preference (hero vs. villain), gaming status preference (in teams vs. alone). There were four DVs: scores on pleasure in viewing violent media (PVVM), antisocial behaviors, and aggressiveness. Social desirability was entered as a covariate.

Gaming type preference was not associated with a significant effect on the DVs ($F [3, 160] = 1.68, ns$). None of the univariate tests achieved significance (all $ps > .05$).

Gaming role preference was not associated with a significant effect on the DVs ($F [6, 320] = .37, ns$). None of the univariate tests achieved significance (all $ps > .05$).

Gaming status preference was not associated with a significant effect on the DVs ($F [6, 320] = 1.03, ns$). None of the univariate tests achieved significance (all $ps > .05$).

To further explore gender differences, I compared women and men on videogaming preferences. Men were significantly more likely to prefer playing violent videogames (71.4% male vs. 25% females, *Chi-square* [1] = 31.69, $p < .001$), playing in teams (79.6% male vs. 30.8% females, *Chi-square* [1] = 34.85, $p < .001$), playing the role of hero (77.6% male vs. 50% females, *Chi-square* [1] = 10.96, $p < .05$), and playing the role of villain (16.3% male vs. 6.7% females, *Chi-square* [1] = 14.12, $p < .01$), compared to women.

DISCUSSION

In this study, I made various predictions related to altruism. Specifically, I had hypothesized that videogame players who reported playing violent videogames would show lower levels on a measure of altruism than players who reported playing non-violent videogames. I also hypothesized that players who preferred the role of heroes in the games and enjoyed playing in teams would show higher levels of altruism than players who preferred the role of villains and with playing alone. Contrary to the predictions, the data did not support any of the hypotheses. The basis for the original hypotheses rested upon studies purportedly showing that violent videogaming—in many of its vicissitudes (e.g., violent content, playing villains, playing alone)—may be linked with various forms of aggressiveness and even antisocial behavior (Kimmig et al., 2018; Krcmar, 2015; Greitemeyer, 2015; Whitaker et al., 2011).

Alongside the aforementioned studies, there also exists a body of literature showing that playing violent videogames—just like watching violent movies—is not correlated with or *causally* related to aggressiveness or the commission of violence. For example, Negy et al. (2013) found that self-reported exposure to violent forms of media did not predict actual acts of violence among Mexican or United States young adults. However, in that study, they discovered that the propensity for *enjoying* scenes of violence did significantly predict acts of violence. Other studies also have found weak, or non-existent causal links between exposure to violent forms of media and the commission of violence (Ferguson, 2015; Tears & Neilson, 2013). Our findings are consistent with the results of these studies. It is possible that conventional

views about the order of causality between playing or watching violence and committing violence may be reverse. It may be that playing or watching violence-laden games or programs has no bearing on people's own level of violence or aggressiveness, but that people who are intrinsically drawn to violence (i.e., those who habitually choose to play violent videogames or watch violent movies) also may be intrinsically violent or aggressive themselves.

For exploratory purposes, I conducted additional analyses with a select set of variables. Specifically, I compared those who played violent videogames, played heroes, and played in teams with those who played non-violent games, played villains, and played alone on three variables: pleasure in viewing violent media, antisocial behaviors, and aggressiveness. As with the findings from my hypotheses, there was no significant association between videogame player characteristics and the study variables. My findings are inconsistent with some research that has found types of game players to be linked with aggression (e.g., Krcmar, 2015; Greitemeyer, 2015) and antisocial behavior (Whitaker et al., 2011; Kimmig et al., 2018). Also, there is some research that show the roles videogame players take are correlated with aggression and antisocial behavior (Happ et al., 2015; Rosenberg et al., 2013). Curiously, my data are not consistent with the findings from these studies.

As part of the exploratory analyses, the data indicated that men, on average, were much more likely than women to prefer playing violent videogames, playing in teams, and to some extent, playing the roles of both heroes and villains. These findings are consistent with a plethora of literature showing men tend to be more aggressive and competitive than women in multiple contexts (e.g., see Bettencourt & Miller, 1996; Knight, Guthrie, Page, & Fabes, 2002).

Theoretically and logically, it would seem that exposure to, and preference for, specific types of videogames, including media, ought to correlate with the variables of focus in this study. This would include a theoretical link between negative gaming preferences (e.g., violent games, playing villains, and playing alone) and antisocial behaviors in a broad sense (e.g., less altruism, more antisocial behaviors, and more aggressiveness), as well as a theoretical link between positive gaming preference and pro-social behavior. Absent additional data that might clarify my counterintuitive findings, it is difficult to know with certainty the explanations for my findings.

Obviously, one possible explanation, which was addressed above, is that the concerns held by many people (e.g., researchers, parents, educators, etc.) about the perils of violent videogaming and other forms of media are unwarranted. Another possible explanation for my findings specifically may relate to how this study was designed and conducted. Anecdotal evidence suggests that few videogame players either prefer violent or non-violent games exclusively, but play a variety of game types. That applies to the roles gamers choose to play and the format in which they play (in teams vs. alone). The manner in which I posed the questions forced participants to categorize themselves as one or the other. Although it is possible, as an example, that those who often play violent games self-categorized as a violent game player in my study, it may be the case that the distinction between players preferring violent vs. non-violent games is actually blurred, as those two game-type preferences are not mutually exclusive. This potential problem applies to the other two questions about preferred gaming roles and playing status. The practical overlap between these discreet groups of

players—rather than the theoretical exclusivity between these groups of players—may have muddled this study’s findings.

Moreover, a limitation of my data is that they were acquired from self-report questionnaires. Such questionnaires count on participants having the capacity of characterizing themselves with some level of accuracy and honesty. In addition to that limitation, some of the variables on which participants were expected to self-characterize assessed socially undesirable qualities (e.g., antisocial tendencies, aggressiveness, etc.). Social desirability was measured and controlled for in the analyses, but even that questionnaire is limited by its self-perception and self-report nature. Reliance on self-report questionnaires was another limitation of my study.

Perhaps future researchers should replicate my study using an experimental method. Ideally, such a study would not only randomly assign participants to play a violent or non-violent videogame (and to distinct roles and formats), but also artificially create a situation after playing the videogame whereby participants would have an opportunity assist someone needing help or not. Such a well-designed experimental study may better illuminate my research questions better than the current paper-and-pencil survey.

In summary, despite the consistency of my data supporting the null hypotheses, I believe the overall research questions remain important. Knowing what variables influence individuals to be more pro-social (e.g., compassionate, empathic, altruistic, etc.) is a worthwhile research topic and deserving of increased attention. In the same vein, given the enormous

popularity with videogaming and the wide range of types of games, understanding any possible linkage between videogaming and prosocial behaviors warrant additional studies.

APPENDIX

Table 1

*Means and Standard Deviations of Study Variables as a Function of Type of Game Preference
(N = 173)*

		TYPE OF GAME PREFERENCE	
		Violent (n = 66)	non-Violent (n = 107)
<i>Study Variables^a</i>			
Altruism ^b	<i>Mean (SD)</i>	5.09 (0.69)	5.12 (0.65)
PVVM ^c		3.02 (0.43)	2.86 (0.49)
Antisocial Behaviors ^d		20.90 (5.76)	19.48 (5.51)
Aggressiveness ^e		69.95 (15.86)	70.13 (15.21)
Social Desirability ^f		6.39 (0.28)	6.46 (2.51)

Notes:

^a All *ps* > .05.

^b Altruism measured by the *Helping Orientation Scale* (HOL; Maki, Vitriol, Dwyer, Kim & Snyder, 2017).

^c PVVM = Pleasure at Viewing Violent Media (Negy, Ferguson, Galvanovskis, & Smither, (2013).

^d Antisocial behaviors measured by the *Personality Assessment Inventory* (PAI-A; Morey, 2007).

^e Aggressiveness measured by the *Aggression Questionnaire-Short Form* (AQ-sf; Buss & Warren, 2000).

^f Social desirability measured by the *Marlowe-Crowne Social Desirability Scale–Short Form (M-C SDS-SF*; Reynolds, 1982).

Table 2

Means and Standard Deviations of Study Variables as a Function of Gaming Role Preference
(*N* = 173)

		GAMING ROLE PREFERENCE	
		Hero (<i>n</i> = 100)	Villain (<i>n</i> = 16)
<i>Study Variables^a</i>			
Altruism ^b	<i>Mean (SD)</i>	5.07 (0.66)	5.15 (0.17)
PVVM ^c		2.90 (0.50)	3.11 (0.42)
Antisocial Behaviors ^d		19.77 (6.49)	21.46 (6.92)
Aggressiveness ^e		68.98 (15.83)	77.55 (12.98)
Social Desirability ^f		6.62 (2.43)	6.63 (2.22)

Notes:

^a All *ps* > .05.

^b Altruism measured by *Helping Orientation Scale* (HOI; Maki, Vitriol, Dwyer, Kim & Snyder, 2017).

^c PVVM = Pleasure at Viewing Violent Media (Negy, Ferguson, Galvanovskis, & Smither, (2013).

^d Antisocial behaviors measured by the *Personality Assessment Inventory* (PAI-A; Morey, 2007).

^e Aggressiveness measured by the *Aggression Questionnaire-Short Form* (AQ-sf; Buss & Warren, 2000).

^f Social desirability measured by the *Marlowe-Crowne Social Desirability Scale–Short Form* (M-C SDS-SF; Reynolds, 1982).

Table 3

Means and Standard Deviations of Study Variables as a Function of Gaming Status Preference (N = 173)

		GAMING STATUS PREFERENCE	
		In Teams (n = 78)	Alone (n = 87)
<i>Study Variables^a</i>			
Altruism ^b	<i>Mean (SD)</i>	5.02 (0.63)	5.11 (0.69)
PVVM ^c		2.96 (0.48)	2.91 (0.49)
Antisocial Behaviors ^d		20.90 (5.81)	19.81 (5.58)
Aggressiveness ^e		70.48 (15.21)	69.63 (14.43)
Social Desirability ^f		6.59 (2.52)	6.31 (2.59)

Notes:

^a All *ps* > .05.

^b Altruism measured by the *Helping Orientation Scale* (HOL; Maki, Vitriol, Dwyer, Kim & Snyder, 2017).

^c PVVM = Pleasure at Viewing Violent Media (Negy, Ferguson, Galvanovskis, & Smither, (2013).

^d Antisocial behaviors measured by the *Personality Assessment Inventory* (PAI-A; Morey, 2007).

^e Aggressiveness measured by the *Aggression Questionnaire-Short Form* (AQ-sf; Buss & Warren, 2000).

^f Social desirability measured by the *Marlowe-Crowne Social Desirability Scale-Short Form* (M-C SDS-SF; Reynolds, 1982).

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